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ABSTRACT

U.S. Commissioner of Education, T. H. Bell stated that individualized instructional television via videotape cassette is one of the answers to routine tasks in education, but educational leaders have not moved ahead to take advantage of the capability. The system, he said, allows teachers to select the programs they want and use them when they are needed. The cassettes can be stored on the library shelf. One particular application is for instruction of small groups within the classroom. The system is simple enough for any teacher to use and inexpensive to purchase and operate. Although he thought the key to successful learning will continue to be a bright, personable, and dynamic teacher, educators have lacked creative insight in not bringing instructional technology into teaching and learning. (SK)

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A NEW COMMITMENT TO INSTRUCTIONAL TECHNOLOGY *

T. H. Bell

U.S. Commissioner of Education

More than a century ago Henry David Thoreau said: "It is not enough to be busy . . . The question is: what are we busy about?"

What Thoreau was talking about was direction-- the direction of each of us in our goals, our aspirations, our life itself.

It has often been said about education, as about many other things, that nothing changes but the appearance of change. John Goodlad, dean of the U.C.L.A. Graduate School of Education, says: "Looking in the 1970s for widespread, authentic implementation of innovative ideas contained in the cant and rhetoric of reform in the busy 1960s suggests little movement. Only a small part of each successive wave of recommended change rubs off onto practice."

If what Goodlad says is true, and if it protects us from those who make a reputation by being more daring than we, it may be a good thing. Nevertheless, the history of American education conveys the message of the word change--change in aims, in substance, in access to schooling, and in where and how education occurs.

In the past century, Michigan has been a leader in change and creativity in American education. From the landmark Kalamazoo

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decision, in which the right to have free public high schools was won, to the use of teacher aides, to the concept of the community school as it was pioneered in Flint, and to John Porter's outstanding efforts in accountability, Michigan has marched steadily toward the ultimate goal--equality of opportunity and a learning society.

We in the Federal Government have the same goals that you have and, with massive infusion of Federal aid through the 1965 Elementary and Secondary Education Act, the change that Michigan and other States have got under way has been accelerated.

The money we sent you never seemed to be enough to get the job done. But get it done, you did. Just look back 10 years. Do you teach school today the way you did 10 years ago? Did you have the extensive parental involvement in Grand Rapids 10 years ago that you have here today? I am sure the answer to both questions is no.

It is nice to be here with you today at this Educational Fair, to share in your experiences of successful efforts toward helping children. This "supermarket of success in education" is an excellent way to spread the word so that others may duplicate that success.

It is an opportunity too for us to look at some of the technological developments of recent years and see whether they are really the boon to education that some of us expected them to be.

One of the great hopes a few years ago was that technology would revolutionize education practice. For many years we have recognized that education is a "labor intensive industry." It is not, of

course, technically an industry. But it is labor intensive. This means that almost all of its work must be done with human effort, with very little opportunity for automation and mechanization. We all know that it is hard to develop machines that teach. Teaching is an art, and a higly complex one at that. It is extremely difficult to teach--or learn--through some forms of technology. But we can use machines to perform some of the sub-functions of teaching . . . to carry out some routine tasks.

I am thinking particularly of instructional television -- through use of electro-magnetic tape.

Many observers a few years ago concluded that much of the burden of education could be carried through broadcast television. They pictured a great effort to utilize the skills of some of the great teachers in the United States through its so-called magic.

But broadcast television has never caught on to the extent that many had hoped. The big problem is its rigidity. Teachers and students don't teach or learn in the same way that broadcast television functions. They do not proceed at a uniform rate through the subject matter in a course.

We all know that it is difficult to have every child in a classroom on page 57 at precisely the same hour of the same day. But that is what broadcast television demands. In fact, it holds thousands of classrooms in the same learning sequence.

A fifth grade science course followed through instructional television presented by a broadcasting station locks all participants into the instruction that has been developed through the

television program. We all know that this is just not sound. Children learn at different rates, and teachers work under different circumstances and with uniquely different teaching personalities of their own. It is extremely difficult to coordinate these many diverse factors in a way that leads to effective education where broadcast television is involved.

But there is another string to the television bow. For some time now we have been able to provide individualized instructional television. Years ago a system that would produce a television program on tape cost around $60,000. Now such a system can be purchased for less than a tenth of that amount.

Small videotape playing machines also have been available for a number of years. These machines once had the limitation of reel-to-reel operation. Some have been a bit temperamental to operate, with fine adjustments being required. But in recent years the reel-to-reel videotape player has become a very simple machine. It can be operated by a classroom teacher with only a small amount of instruction.

The video cassette machine is even less complex than the reel-to-reel videotape player. Anyone can operate a video cassette machine. It takes practically no training or preparation. It is as simple to operate as any cassette tape player. With these machines and with the software the problem of rigidity, locksteps and dictation to the teacher. In fact the teacher can have total command.

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Advances in technology have made it possible for us to have individualized instructional television. But educational leaders have just not moved ahead to take advantage of this capability.

Through the use of video cassette machines, it is now possible for classroom teachers to have individualized instructional television. They can select the programs they want and use them when they are needed. Moreover, the school library can store video cassettes on the shelf just like books.

Through this means, we are able to eliminate the rigidity that has been the biggest objection to broadcast television. Through this means, teachers can use TV for the entire class, for a sub-group of, say, 12 children, or for special viewing by one or two children. By utilizing earphones for the audio part of television, the video cassette player can be used as a slave mechanism to deliver a lecture or a well animated demonstration in one corner of the room. A sub-unit of the class can participate while the teacher works with another group.

We can afford to invest thousands of dollars to produce one sequence in a studio with optimum attention holding power since it can be duplicated and used over and over again -- but at the total choice and discretion of the teacher.

We are all familiar with how primary grade teachers divide children up into small reading groups. The children come up before the teacher to receive individualized instruction in an almost tutorial mode. For years the big problem has been what to do with the other children

while the teacher is busy with a sub-group of six or eight. The video cassette machine and the individualized instructional television program made possible by it will facilitate at least one possible solution to this problem.

Through providing a supply of videotapes to each school and through constantly erasing and recopying different programs, the variety of choice from the school library can be enormous. Moreover, the teaching staff avoids the rental problems it usually has to face in utilizing 16-millimeter sound film. Films are so costly that very few school systems can afford to provide a separate film library for each and every school. They must be ordered in advance by mail and must be returned on a rigid schedule. Needless to say, this is not so with the individualized instructional television that I have been describing to you. The teacher does not have to plan days ahead. The special lecture of demonstration can be used at a moment's notice. It can emerge spontaneously out of group interest on the spur of the moment.

Many books in the school library cost more than a video cassette tape. It is no more costly for a school system to have a selection of 500 video cassette tapes than it would be to have several hundred middle-priced books on the library shelves. Admittedly, there is additional cost in the video cassette player. But a player is suprisingly inexpensive and constitutes an investment comparable to a good 16-millimeter projector and to other items of instructional equipment.

I am sure that there is going to continue to be an important role for broadcast educational television in reaching large numbers of persons. Certainly such programs as Sesame Street, directed towards the millions of homes where preschoolers sit as entranced viewers, will continue to be a vital part of a well developed program of instructional television.

But, insofar as in-school television is concerned, we must shift our attention to individualized instructional television with machine and program totally responsive to the will of the teacher. Here is a powerful tool in the hands of the teacher -- a slave mechanism -- a telling, showing, demonstrating machine.

American education has been extremely slow to respond to this potential. If we are to provide our students with the advantages of this powerful tool, we must move more aggressively to develop the system. The advantages of it are so obvious that it should take very little selling on our part. For example, aside from the other features that I have been describing, this machine can be stopped in the middle of a presentation while the teacher amplifies a particular point. And it can be turned back and key points repeated. In fact, unlike human beings, the machine can repeat endlessly without losing its patience. It can come on in color, with dramatic sound effects and with all kinds of animation. It beats a lecture limited to chalk and the jawbone of the teacher but the machine can't do the

creative-act -- lecturing -- so that the teacher is free to do other things.

The potential of a more complex instructional system, involving computers and individualized instructional television, needs to be explored more aggressively than it is. We are not pushing as hard as we should in instructional technology. Advances in electronics have been simply amazing over the past few years, and we should be using many of these developments to individualize instruction and extend the power and reach of the teacher.

Having said all this, I predict that the key to successful learning will continue to be a bright, personable, and dynamic teacher. But, as we consider the challenges we face in education, we must blame ourselves for lack of creative insight in not bringing instructional technology into teaching and learning.

We are certainly going to see more emphasis on development of instructional systems. But with it will be an emphasis on eliminating the rigidity and the restrictions that have turned teachers off in the past. Perhaps the greatest frustration coming out of the rigidity of broadcast television is that now we have an even bigger problem getting teachers and curriculum leaders to try television again. It is hard to convince them that technological developments now make it possible to individualize television instruction and place it under the control of the teacher.

In producing instructional programs and systems utilizing computers and the miracles of electromagnetic tapes, we must

recognize that we have a long way to go to build a truly modern system that reflects the expertise and technology available in our time. As we prepare to observe the beginning of our Nation's third century, it is time to renew our interest in developing devices that can carry some of the burdens of instruction and liberate the teacher for the more creative efforts that can only be carried out by highly trained and fully committed professionals.

I hope that my remarks about broadcast television will not be misunderstood. I think that broadcast television and the role that educational television stations have been playing in the United States will continue to be vital to education. The Corporation for Public Broadcasting and the Public Broadcasting Service perform a very important role. The many excellent educational television stations that we have in this country are performing wonderfully to advance the cause of education and to help keep the American people enlightened and up-to-date.

We will continue to need broadcast television in the field of education. But I believe that we will find the advantages to classroom teachers in individualized instructional television will be so great that we will shift our emphasis to this mode of bringing television to classrooms around the country. After this is done, there will still be many occasions when special broadcasts can be utilized in schools. And, of course, there will still be enormous demand for educational television in the homes of more than 200 million people.

I would like to conclude these remarks by emphasizing that education technology is still in its infancy. It needs more support by all of us. It is, at long last, possible to develop sophisticated systems that will indeed individualize instruction and will make teaching and learning more humane and more adaptable to the various styles and techniques of the thousands of teachers practicing the very vital and complex art of teaching.

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